REVISED 08/10

LSUE COURSE SYLLABUS

I.	Mathematics 1021	Instructor: Mathematics Faculty

II.	Course description from the current LSUE catalog:

1021 College Algebra. Lec. 3 Cr. 3
Quadratic equations, systems of linear equations, inequalities, functions, graphs, exponential and logarithmic functions, theory of equations.
Prerequisite: Math ACT subscore of 19 or higher or grade of "C" or better in Mathematics 0002, or consent of the Head, Division of Sciences and Mathematics.
Only one of MATH 1017, MATH 1021 or MATH 1023 may be used for degree credit.

III.	Textbook(s) and other required materials:

College Algebra & Trigonometry, 8th edition by Sullivan
Students are expected to use a graphing calculator as necessary in this course. The TI-83 Plus or TI 84 Plus is recommended. MyMathLab will be used by some instructors and will be bundled with the textbook.

IV.	Evaluation/grading (policy and basis; number and frequency of tests and papers; weights of particular tests or papers; etc.):

Semester grades are largely determined by performance on hour exams and a comprehensive final exam. Other factors that may be used in determining grades are homework, pop quizzes, recitation, and attendance. A departmental final exam will be given in the event of multiple sections.

V.	Policies pertaining to attendance, late work, make-up work, etc.:

Students are expected to attend class on a regular basis. Any hour exam which is missed will be made up on a pro-rata basis on the final examination. For example, if a student misses Exam #2, then those questions on the final examination, which pertain to the topics tested on Exam #2 will determine the student's grade on Exam #2. If a student earns 40 of 50 possible points from those questions only, then the student earns 80% on Exam #2.

VI.	Course objectives:

A. Development of an understanding, awareness, and appreciation of mathematics.
B. Enhancement of problem solving abilities.
C. Enhancement of mathematical communication skills, both in written and oral form.
D. Improvement of critical thinking and reasoning abilities.
E. Enhancement of understanding of mathematical structure and operations.
F. Increased use of multi-media technology as a tool for both learning and performing mathematics.
G. Heightened awareness of the connectiveness of mathematics, and also its relationship with both other disciplines and the real world.

VII. Major instructional objectives:

The student, upon successful completion of this course, will be able to:

A. Graph polynomial functions with rational coefficients.
B. Graph logarithmic and exponential functions.
C. Manipulate equations and graphs of lines and circles
D. Use logarithmic and exponential operations to solve equations and to work problems involving exponential growth and decay.
E. Solve absolute value equations and inequalities
F. Shift, stretch, and reflect graphs of functions.
G. Find the inverse of functions.

VIII. Brief summary of course content by major units of instruction:

A. Equations and Inequalities
    1. Linear Equations
    2. Quadratic Equations
    3. Radical Equations; Equations Quadratic in Form; Factorable Equations
    4. Solving Inequalities
    5. Equations and Inequalities Involving Absolute Value

B. Graphs
    1. The Distance and Midpoint Formulas
    2. Graphs of Equations in Two Variables; Intercepts; Symmetry
    3. Lines
    4. Circles

C. Functions and Their Graphs
    1. Functions
    2. The Graph of a Function
    3. Properties of Functions
    4. Library of Functions, Piecewise-defined Functions

5. Graphing Techniques: Transformations

D. Linear and Quadratic Functions
   1. Linear Functions and Their Properties
   2. Quadratic Functions and Their Properties
   3. Inequalities Involving Quadratic Functions

E. Polynomial and Rational Functions
   1. Polynomial Functions and Models
   2. Properties of Rational Functions
   3. The Graph of a Rational Function
   4. Polynomial and Rational Inequalities

F. Exponential and Logarithmic Functions
   1. Composite Functions
   2. One-to-One Functions; Inverse Functions
   3. Exponential Functions
   4. Logarithmic Functions
   5. Properties of Logarithms
   6. Logarithmic and Exponential Equations
   7. Compound Interest
   8. Exponential Growth and Decay Models

IX.	Methods of instruction:

The chief method of instruction is the lecture method along with class discussions of the subject matter.

X.	Brief overview of special instructions:

Students may seek tutorial assistance in the Tutorial Center.

XI.	Bibliography of supplemental references and/or source materials:

MyMathLab resources available via Internet; SmartThinking Tutoring available via Internet

ADS	(Americans with Disabilities Act) Statement

Any student who is a "qualified individual with a disability" as defined by Section 504 of the Rehabilitation Act and Title II of the ADA, and who will need accommodated services (e.g., note takers, extended test time, audiotape, tutorials, etc.) for this course must register and request services through the Office of Academic Assistance Programs, S-150.

CSD	CODE OF STUDENT CONDUCT

LSUE enforces discipline on campus to protect the academic environment of the campus and the health and safety of all members of the University community. To accomplish this objective, the University enforces standards of conduct for its students. Students who violate these standards can be denied membership in the LSUE community through imposition of disciplinary sanctions.

The LSUE Code of Student Conduct can be found on the LSUE website (lsue.edu). Follow the “Current Students” link from the homepage, and then click on “Student Handbook.”

MATH 1021 OUTLINE
08/10

1.1, 1.2, 1.4, 1.5, 1.6

2.1, 2.2, 2.3, 2.4

3.1, 3.2, 3.3, 3.4, 3.5

4.1, 4.3, 4.5

5.1, 5.2, 5.3, 5.4

6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8

MATH 1021 COLLEGE ALGEBRA TOPICS AND OBJECTIVES

1.1 Linear Equations

- Solve a linear equation
- Solve equations that lead to linear equations
- Solve applied problems involving linear equations

1.2 Quadratic Equations

- Solve a quadratic equation by factoring
- Solve a quadratic equation using the Quadratic Formula

1.4 Radical, Quadratic-type, and Factorable Equations

- Solve radical equations
- Solve equations quadratic in form
- Solve equations using factoring techniques

1.5 Inequalities

- Use interval notation
- Use properties of inequalities
- Solve inequalities
- Solve combined inequalities

1.6 Equations and Inequalities Involving Absolute Value

- Solve equations involving absolute value
- Solve inequalities involving absolute value

2.1 Rectangular Coordinate System

- Use the distance formula
- Use the midpoint formula

2.2 Intercepts and Symmetry

- Find intercepts from a graph
- Find symmetry from a graph
- Find intercepts from an equation
- Find symmetry from an equation

2.3 Lines

- Calculate and interpret the slope of a line
- Graph lines given a point and the slope
- Find the equation of a vertical line and of a horizontal line
- Use the point-slope form of a line
- Write the equation of a line in slope-intercept form
- Write the equation of a line in general form

- Define parallel lines and find equations of parallel lines
- Define perpendicular lines and find equations of perpendicular lines

2.4 Circles

- Write the standard form of the equation of a circle
- Graph a circle
- Find the center and radius of a circle in standard form and graph
- Find the center and radius of a circle in general form and graph

3.1 Functions

- Determine whether a relation represents a function
- Find the value of a function
- Find the domain of a function
- Find the range of a function

3.2 Graph of a Function

- Identify the graph of a function
- Obtain information from or about the graph of a function

3.3 Properties of Functions

- Determine even and odd functions from a graph
- Determine even and odd functions from an equation
- Use a graph to determine…increasing, decreasing, or constant
- Use a graph to locate local maxima and minima

3.4 Graphs of Basic Functions and Piecewise-defined Functions

- Graph the basic functions
- Graph piecewise-defined functions

3.5 Graphing Techniques: Transformations

- Graph basic functions using horizontal and vertical shifts
- Graph basic functions using compressions and stretches
- Graph basic functions using reflections about the x- or y-axis

4.1 Linear Functions

- Graph linear functions
- Use average rate of change to identify linear functions
- Determine whether a linear function is increasing, decreasing, or constant

4.3 Quadratic Functions

- Graph a quadratic function using transformations
- Identify the vertex and axis of symmetry of a quadratic function
- Graph a quadratic function using its vertex, axis, and intercepts

- Use max/min value of a quadratic function to solve applied problems

4.5 Inequalities Involving Quadratic Functions

- Solve inequalities involving a quadratic function

5.1 Polynomial Functions

- Identify polynomials and their degree
- Graph polynomial functions using transformations
- Analyze the graph of a polynomial function

5.2 Properities of Rational Functions

- Find the domain of rational functions
- Identify vertical asymptotes
- Identify horizontal asymptotes

5.3 Graphs of Rational Functions

- Graph rational functions
- Identify oblique/slant asymptotes

5.4 Polynomial and Rational Inequalities

- Solve polynomial inequalities from the graph
- Solve polynomial inequalities from the equation
- Solve rational inequalities from the graph
- Solve rational inequalities from the equation

6.1 Composite Functions

- Form the composite function and find its domain

6.2 Inverse Functions

- Determine the inverse of a function
- Obtain the graph of the inverse function from the graph of the function
- Find the inverse function

6.3 Exponential Functions

- Evaluate exponential functions
- Graph exponential functions
- Define the number *e*
- Solve exponential equations with like bases
- Solve simple exponential equations

6.4 Logarithmic Functions

- Change exponential expressions to logarithmic expressions
- Change logarithmic expressions to exponential expressions
- Evaluate logarithmic functions
- Determine the domain of a logarithmic function

- Graph logarithmic functions
- Solve simple logarithmic equations

6.5 Properties of Logarithmic Functions

- Work with the properties of logarithms
- Write a logarithmic expression as a sum or difference of logarithms
- Write a logarithmic expression as a single logarithm
- Evaluate logarithms whose base is neither 10 nor *e*

6.6 Solving Logarithmic and Exponential Equations

- Solve Logarithmic equations using the properties of logarithms
- Solve exponential equations using logarithms

6.7 Compound Interest

- Determine the future value of a lump sum of money
- Determine the time required to double or triple a lump sum of money

6.8 Exponential Growth and Decay

- Solve applications involving exponential growth and decay